ties are, however, but a slight test of the value of any contribution to science, and the present instance is no exception. The principal feature of this paper is the extent to which it increases our knowledge of the bathymetrical distribution of the forms enumerated, and points out the coincidences between depth of occurrence and points of structure. These lists record forty-three species as coming from below the 1000 fathom line, while twenty-two were taken from a depth greater than 2000 fathoms. The greatest depth recorded is 2949 fathoms, and from a single station of this depth, about 350 miles east of the mouth of the Chesapeake the trawl brought up *Acanthephyra agassizii*, *A. brevirostris*, *Notostomus vescus*, *Hymenodora glacialis*, *Parapasiphaë sulcatifrons*, *Hepomadus tener* and *Sergestes mollis*. Of the pertinence of the first of these to these great depths some doubt is expressed, as at another time one was caught swimming at the surface. All of these forms it is to be noted are macrurous.

Some of the deep-sea forms are colorless, but most are of some bright shade of red or orange. Their eyes have undergone a careful superficial examination. In some the black pigment, the corneal facets and the like are much as in shallow-water forms, except that occasionally the eyes are smaller. In Munidopsis and Pentacheles the visual elements are apparently lacking, while in others the pigment is light colored and the visual elements are reduced in number. In some of the deep-water shrimps there is a curious accessory organ borne on the eye-stalks which may be phosphorescent in its nature. It certainly deserves careful histological examination at competent hands. In the eggs, too, a peculiarity is noticed. Among the shallow-water decapods the eggs are usually so small that it is a matter of some difficulty to cut sections of them, but in these deep-water forms they attain a very considerable size, those of *Parapasiphaë sulcatifrons* having a diameter fifteen times those of the common soft-shelled crab, *Neptunus hastatus*.

We have a little fault to find with the present paper. The first is that which is found in all of the Fish Commission publications, but which here is not as bad as in embryological work—the use of process cuts. We notice a tendency to the creation of new families which hardly seems to be warranted. Until we know more of the morphology of the crustacean gill it hardly seems advisable to make gill-structure alone the basis of forming higher groups and separating widely species which are in all other respects closely allied.

SEDGWICK AND WILSON'S BIOLOGY.[1]—We have several guides to laboratory work in biology, but the great fault with all is that they stick too closely to the anatomical and developmental sides

[1] *General Biology*. By WILLIAM T. SEDGWICK and EDMUND B. WILSON. New York, H. Holt & Co. pp. VII + 193. 1886.

and almost entirely ignore the physiological aspect of animals and plants. A student has gained a valuable fact when he has learned the name and structure of any organ, but until he knows its function and the method in which it is performed his knowledge regarding it is incomplete. The present hand-book aims to teach the physiological as well as the morphological side, and thus fills a place which no other work in the English language does. It is, we understand, but a portion of what is intended, and this fact should be borne in mind in the following account. Still in its present condition it is admirably adapted for grounding students in biology. There are numerous exercises for the laboratory, and the directions for these are excellent; they tell the student what to do, but leave him to describe the results, thus giving the instructor a test of the student's progress.

The first three chapters are devoted to the phenomena of life and the study of organic matter, then follows a chapter on the cell, after which comes the study of special forms. Of these there are two, the fern—Pteris, and the earth-worm; and we agree with the authors in regarding these two forms as well adapted for study by the beginner as any. The book is well illustrated, most of the cuts being original, and though made by photo process they are usually clear and free from broken lines. A rather careful examination of the book reveals but little which calls for adverse criticism. On p. 123 it is stated that "all the organs of the body are originally developed from the walls of" the cœlom of the earth-worm, which is not true in the sense in which it will ordinarily be understood. Again one might criticise the use of "ectoblast" and "entoblast" (p. 178) for the inner and outer germ layers. Several other terms have priority, and it seems needless to multiply terms for each stage in the development of the organism. To be consistent the authors should replace the the term archenteron on p. 149 (not on 148) by mesenteron. The proof-reading has been very well done, and the typographical errors rare. The printer is, however, to be criticised, as he has used a badly worn font of type, and broken and battered letters are much too common. With the exception of these few points and a few of like character we have nothing but praise for the book.

WHITFIELD'S BRACHIOPODA AND LAMELLIBRANCHIATA OF NEW JERSEY.[1]—This quarto volume is occupied with the Brachiopoda and Lamellibranchiata of the Raritan clays and greensand marls. Only three genera of Brachiopoda, Terebratula, Terebratulina and Terebratella, occur in New Jersey, and only two species, *Terebratula harlani* and *Terebratella plicata*, are at all abundant. The plastic clays, some of the layers of which yield large numbers of

[1] *Whitfield's Brachiopoda and Lamellibranchiata of the Raritan clays and greensand marls of New Jersey.* By R. J. WHITFIELD. T. L. Murphy, State printing office, Trenton, N. J.